

## POTENTIOMETRY IN ICE MEDIA

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Presence of a nonfreezing layer on a surface of ice [1] allows using it as a conductor in electrochemical cells.

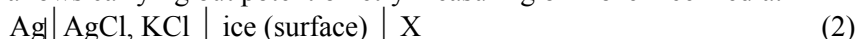
For experiments by definition of equilibrium potential in systems with ice reference electrodes (AgCl, Ag ЭСЛ 43-07), high-resistance voltmeter (OP 211), minerals from Udokan deposits and some metals have been used.

An equilibrium potential in a circuit:



makes  $0 \pm 2$  mV.

Normal conductivity in (1) allows carrying out potentiometry measuring on frozen ice media:



As electrode X Udokan's sulfides and some metals have been used (Tab.). Values of potentials depend on uniformity of samples but not on their shape and size. Short circuit of cells (2) is observed only on surface of ice. In cases with frozen electrodes ( $> 1$  mm) conductivity does not occur.

**Table.** Potentials of some sulfides and metals in circuit (2) with frozen distilled water.

Электрод, X	E, мВ
Al	$-840 \pm 10$
Cu	$-60 \pm 15$
Pb	$-160 \pm 15$
Bi	$-312 \pm 10$
Fe	$-287 \pm 15$
Zn	$-800 \pm 15$
Cu <sub>5</sub> FeS <sub>4</sub> (борнит)	$185 \pm 8$
Cu <sub>2</sub> S (халькозин)	$130 \pm 10$
FeS <sub>2</sub> (пирит)	$310 \pm 10$

## Reference

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